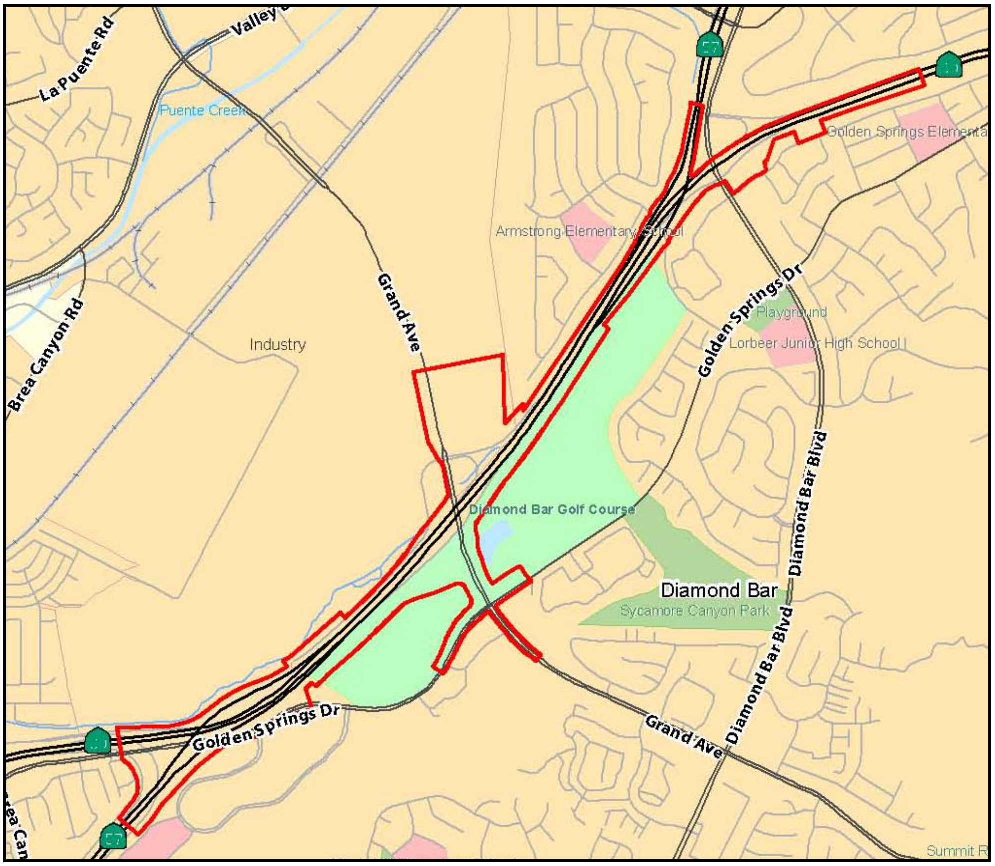
State Route 57/State Route 60 Confluence Project



Qualitative PM10 and PM2.5 Hot-Spot Analysis

City of Industry, California

07-LA-57-PM-R4.3/R4.5 and R4.5/R4.8
07-LA-60-PM-R23.7/R26.5

EA Number: 279100

January 2012

Caltrans

Table of Contents

PAGE

APPENDIX A

Tables

Figures

Acronyms and Abbreviations

$\mu g/m^3$	micrograms per cubic meter
ADT	Average Daily Traffic
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
California CAA	California Clean Air Act
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of Industry
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
EIR/EA	environmental impact report/environmental assessment
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
FR	Federal Register
FTIP	Federal Transportation Improvement Program
IAC	interagency consultation
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
PM10	particulate matter less than or equal to 10 microns in diameter
PM2.5	particulate matter less than or equal to 2.5 microns in diameter
POAQC	Project of Air Quality Concern
ppm	parts per million
RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SR	State Route
VMT	vehicle miles travelled

Chapter 1 Introduction

The City of Industry, in cooperation with the California Department of Transportation (Caltrans or Department) District 7 and the Federal Highway Administration (FHWA), proposes to reconfigure the approximately 2.5-mile confluence of State Route (SR) 57 and SR-60. This would include the addition of auxiliary lanes and associated on-ramp/off-ramp reconfigurations. SR-57 and SR-60 are major inter-regional freeways that link cities in the San Gabriel Valley and the Inland Empire with Los Angeles and Orange counties. Please refer to Chapter 2, “Project Description,” for a detailed description of the build alternatives.

The proposed project is included in the Southern California Association of Governments (SCAG) 2008 Regional Transportation Plan (RTP) Amendment #4 and the SCAG 2011 Federal Transportation Improvement Program (FTIP or TIP) under project identification number LA0D450. The 2011 FTIP was adopted by SCAG on September 2, 2010, and FHWA approved the TIP on December 14, 2010. The 2011 FTIP model list replaces the RTP Amendment #4 model list. Because the 2011 FTIP model list includes the proposed project (Project ID# LA0D450), the proposed project is considered to have satisfied regional conformity requirements. Please refer to Appendix A for documentation from 2008 RTP Amendment #4 and the 2011 FTIP.

This project-level particulate matter hot-spot analysis for the SR-57/SR-60 Confluence Project responds to the U.S. Environmental Protection Agency’s (EPA’s) requirement for a hot-spot analysis for particulate matter less than or equal to 10 microns in diameter (PM10) and/or particulate matter less than or equal to 2.5 microns in diameter (PM2.5), as required in EPA’s March 10, 2006, Final Transportation Conformity Rule (71 Federal Register [FR] 12468). The effects of localized PM10 and PM2.5 hot spots were evaluated with use of the EPA and FHWA guidance manual, *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (Federal Highway Administration and U.S. Environmental Protection Agency 2006).[1] This qualitative particulate matter hot-spot analysis demonstrates how the proposed project meets project-level particulate matter conformity requirements for PM10 and PM2.5.

[1] The availability of new EPA guidance documents for completing quantitative particulate matter (PM2.5 and PM10) hot-spot analyses was announced in the Federal Register on December 20, 2010 (75 FR 79370). The announcement provides a 2-year grace period before use of the new quantitative particulate matter hot-spot guidance is required for project-level particulate matter conformity determinations. Until December 20, 2012, project-level conformity determinations made using the 2006 qualitative guidance remain appropriate.

[this page left blank intentionally]

Chapter 2 Project Description

2.1 Introduction

The City of Industry, in cooperation with Caltrans, is proposing freeway improvements to the SR-57/SR-60 confluence at the Grand Avenue interchange in Los Angeles County. Figure 2-1 and Figure 2-2 show the regional location and project vicinity. The proposed project would be subject to both the California Environmental Quality Act (CEQA) and the federal National Environmental Policy Act (NEPA). The City of Industry would be the lead agency under CEQA, and Caltrans would be the lead agency under NEPA.

SR-57 is a major north-south freeway, serving the cities and communities of the Greater Los Angeles area. This freeway's north terminus is at its junction with Interstate (I) 210 in the City of Glendora, and its south terminus is at its junction with I-5 and SR-22 in the City of Orange. The portion of SR-57 within the project area is located in the Pomona Valley.

SR-60 is a major east-west freeway and also serves the cities and communities of the Greater Los Angeles area. SR-60 is part of the National Highway System (NHS) and the State Freeway and Expressway (F&E) System. SR-60 runs from I-10 in the City of Los Angeles, near the Los Angeles River, east to I-10 in Riverside County, serving the cities and communities on the east side of the Los Angeles metropolitan area and on the south side of the San Gabriel Valley. The west terminus of the freeway is at the East Los Angeles interchange, and the east terminus is at its junction with I-10 in the City of Beaumont.

SR-57 and SR-60 meet and interconnect in the City of Diamond Bar and the City of Industry. The two freeways have a generally northeasterly/southwesterly orientation, with northbound/eastbound traffic sharing the alignment for approximately 1.26 miles and southbound/westbound traffic sharing the alignment for approximately 1.34 miles.

The primary purposes of the proposed project are to improve traffic operations and safety on SR-57 and SR-60 at the Grand Avenue interchange.

2.2 Project Description

The proposed project would consist of the reconfiguration of the approximately 2.5-mile confluence of SR-57 and SR-60. This would include the addition of auxiliary lanes and associated on-ramp/off-ramp reconfigurations. SR-57 and SR-60 are major inter-regional freeways that link cities in the San Gabriel Valley and the Inland Empire with Los Angeles and Orange counties.

Figure 2-1: Regional Vicinity Map

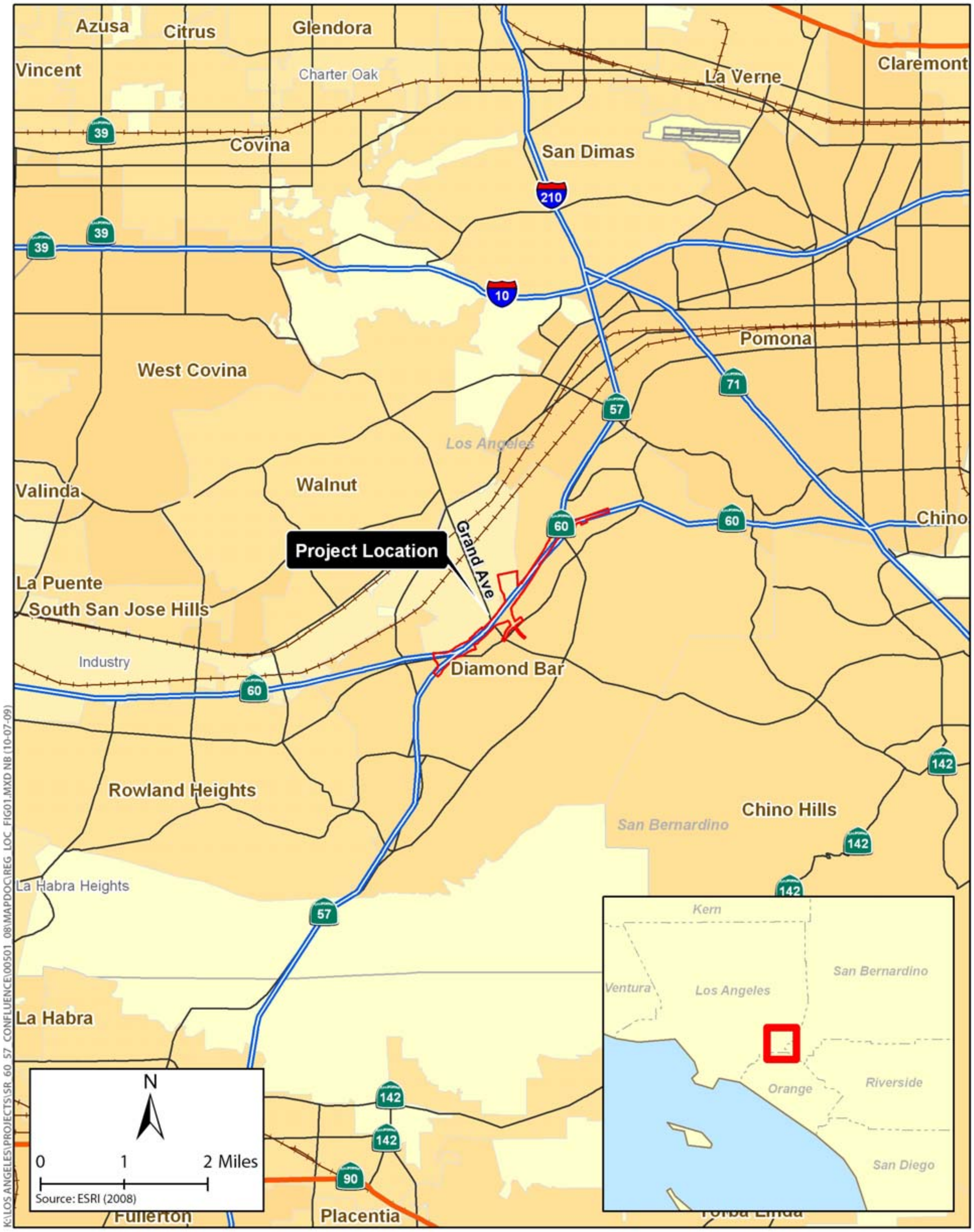
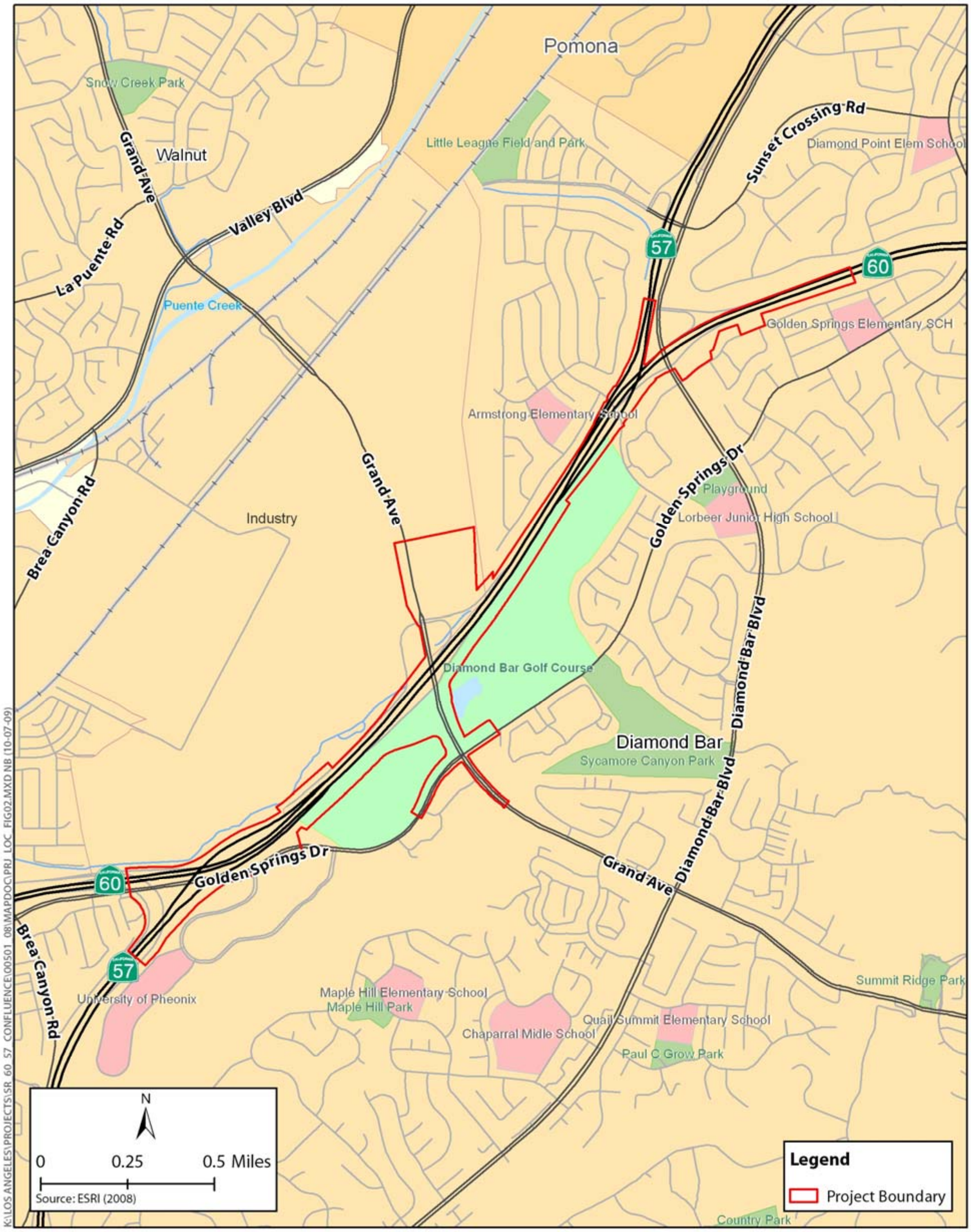


Figure 2-2: Project Location Map



2.2.1 Alternative 1 – No-Build Alternative

The No-Build (or No-Action) Alternative would result in no structural or physical changes to SR-57, SR-60, or the Grand Avenue interchange. Existing deficient capacity and congestion conditions due to short weaving sections on SR-57, SR-60, and Grand Avenue would not change under this alternative.

2.2.2 Build Alternatives

Two build alternatives are being considered. The two build alternatives (Alternatives 2 and 3) are described below and shown in Figures 2-3 and 2-4. Under both build alternatives, a new bypass off-ramp is proposed for eastbound SR-60 west of the southern/western SR-57/SR-60 junction. The bypass off-ramp would be barrier separated from SR-57/SR-60 traffic until passing the Grand Avenue off-ramp. Northbound SR-57 traffic would exit to Grand Avenue by using an optional exit from the third SR-57 lane. The off-ramp lane would combine with the one-lane eastbound SR-60 bypass off-ramp. The off-ramp would widen to three lanes at the final approach to the intersection at Grand Avenue.

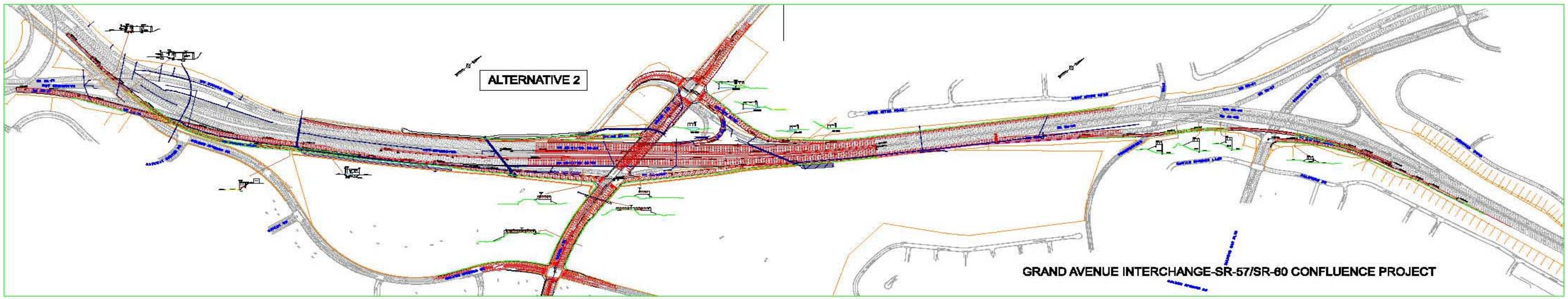
Currently, the third lane on SR-57 ends at the Grand Avenue off-ramp but begins again 4,200 feet to the east. The build alternatives would both add this lane between the Grand Avenue off-ramp and the additional lane near the SR-57 diverge at the east end. An auxiliary lane would be added adjacent to the added through lane to serve traffic entering from Grand Avenue.

At the east end of the confluence, a bypass connector would be built to connect the Grand Avenue eastbound on-ramp auxiliary lane with eastbound SR-60. This connector would require new overcrossing structures at Prospector Road and Diamond Bar Boulevard as well as realignment of the Diamond Bar Boulevard on-ramp.

In the westbound direction, the dropped southbound SR-57 lane would be extended 2,500 feet to the realigned westbound SR-60 off-ramp to Grand Avenue, creating a two-lane exit ramp. The exit ramp would expand to five lanes at the intersection.

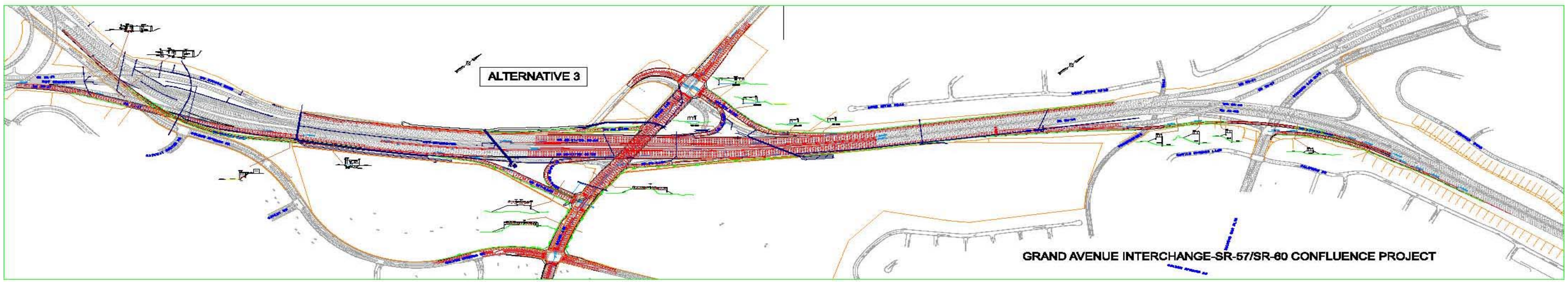
Operational improvements along Grand Avenue include widening the roadway to four through lanes in each direction under both build alternatives. Grand Avenue would be widened easterly, encroaching on the westbound loop on-ramp. Grand Avenue would be realigned approximately 50 feet east of the existing centerline to avoid a right-of-way take from a vacant automobile dealership on Grand Avenue north of SR-60. The centerline shift of Grand Avenue would require the westbound off-ramp to be relocated approximately 100 feet north of the existing intersection on Grand Avenue. The intersection relocation would also require realignment of the two-lane westbound loop on-ramp and Old Brea Canyon Road (to be renamed Grand Crossing Parkway).

Figure 2-3: Alternative 2, Combination Cloverleaf/Diamond Interchange Configuration



[this page left blank intentionally]

Figure 2-4: Alternative 3, Partial Cloverleaf Interchange Configuration



[this page left blank intentionally]

The existing Grand Avenue overcrossing does not have sufficient length to accommodate an added northbound SR-57 through lane or sufficient vertical clearance over SR-60 to allow for widening. Therefore, it would be replaced. The replacement bridge would be longer and deeper, resulting in a raised profile along Grand Avenue.

The widening of Grand Avenue would continue south to Golden Springs Drive. Golden Springs Drive would be widened to allow additional through lanes, double left-turn lanes, and one right-turn lane on three legs of the intersection of Grand Avenue and Golden Springs Drive. One right-turn lane would be provided on Grand Avenue at the northbound approach to Golden Springs Drive. Approximately 600 feet of northbound Grand Avenue south of the intersection at Golden Springs Drive would be restriped to three lanes.

A continuous pedestrian walkway is currently provided on the west side of Grand Avenue between Golden Springs Drive and Old Brea Canyon Road. However, on the east side of Grand Avenue, no pedestrian walkway is provided north of the overcrossing. Under both alternatives, 8-foot-wide walkways on both sides of Grand Avenue would be constructed from Golden Springs Drive to Old Brea Canyon Road. Construction of build the alternatives would not affect pedestrian walkways on other local roads.

The eastbound bypass off-ramp would require a sliver right-of-way take from a hotel property on Golden Springs Drive. The bypass connector from the eastbound on-ramp would require sliver right-of-way takes from several commercial properties on Diamond Bar Boulevard, a hotel and restaurant on Gentle Springs Lane, and a gas station and restaurant on Palomino Drive. No impact on residential properties is anticipated under either build alternative. Under both build alternatives, temporary construction easements totaling 3.4 acres, excluding the golf course property, would be required during the construction period.

2.2.2.1 Alternative 2: Combination Cloverleaf/Diamond Configuration Interchange Alternative

Alternative 2 would maintain the existing interchange configuration (compact diamond) for the eastbound SR-60 on- and off-ramps. The interchange configuration at Grand Avenue for Alternative 2 would remain a combination partial cloverleaf for the westbound SR-60 on- and off-ramps. An auxiliary lane would be added, connecting the new three-lane on-ramp at Grand Avenue to the new connector, which would bypasses the north/east SR-57/SR-60 interchange.

As discussed above, the existing Grand Avenue overcrossing does not have sufficient length to accommodate an added northbound SR-57 through lane or sufficient vertical clearance over SR-60 to allow for widening. Therefore, it would be replaced. Under Alternative 2, the existing Grand Avenue overcrossing would be replaced by a 10-lane, 148-foot-wide structure over SR-60. The longer span would require a deeper structure, raising the Grand Avenue profile by about 4 feet. The bridge would contain eight through lanes and two 450-foot-long double left-turn lanes from southbound Grand Avenue to the eastbound on-ramp.

2.2.2.2 Alternative 3: Partial Cloverleaf Interchange Configuration Alternative

The main difference between Alternative 2 and Alternative 3 is the configuration of the eastbound SR-60 interchange at Grand Avenue. Under Alternative 3, the existing eastbound on- and off-ramps at Grand Avenue, which form a compact diamond interchange, would be reconfigured to form a partial cloverleaf interchange. The new intersection at Grand Avenue and the new eastbound on- and off-ramps would be located approximately 500 feet south of the existing intersection (i.e., midway between the freeway and Golden Springs Drive). The new eastbound on-ramp from southbound Grand Avenue would be a loop on-ramp that would join SR-60 as a new eastbound auxiliary lane. The existing eastbound on-ramp would be realigned to accommodate the widened Grand Avenue and merge into the eastbound auxiliary lane created by the new loop on-ramp from southbound Grand Avenue to eastbound SR-60. The auxiliary lane would connect to the new connector that bypasses the north/east SR-57/SR-60 interchange.

As discussed above, the existing Grand Avenue overcrossing would be replaced by a new structure over SR-60. However, unlike Alternative 2, a double left-turn lane from southbound Grand Avenue to the eastbound on-ramp would not be required because vehicles traveling southbound on Grand Avenue would access northbound SR-57 and eastbound SR-60 by way of the new loop on-ramp on the west side of Grand Avenue. The new Grand Avenue overcrossing would be widened to accommodate eight through lanes and a center divider/median.

2.2.2.3 Construction Activities and Staging

The construction phase of the proposed project is anticipated to begin in the fall of 2014 and end by the fall of 2017. The proposed project would involve clearing, excavation, grading, and other site preparation activities prior to structural work and paving. On-site construction staging would occur just north of the westbound SR-60/southbound SR-57 Grand Avenue on- and off-ramps. This area, which is east of Grand Avenue, is owned by the City of Industry.

Chapter 3 PM10 and PM2.5 Hot-Spot Analysis

The following is the SR-57/SR-60 Confluence Project hot spot conformity analysis for particulate matter less than or equal to 10 microns in diameter (PM10) and particulate matter less than or equal to 2.5 microns in diameter (PM2.5). In accordance with the final Transportation Conformity Rule, 40 CFR 93.116 and 93.123 (b)(1), this project is defined as a Project of Air Quality Concern (POAQC) and requires a qualitative PM2.5 and PM10 hot spot analysis.

3.1 Regulatory Background

Under 1990 Clean Air Act Amendments, the U.S. Department of Transportation (DOT) cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to the State Implementation Plan (SIP) for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTPs) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether or not implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the Southern California Association of Governments (SCAG) for Riverside County and the appropriate federal agencies, such as the Federal Highway Administration (FHWA), make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter. A region is a “nonattainment” area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in “nonattainment” areas the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

The concept of transportation conformity was introduced in the CAA 1977 amendments. Transportation conformity requires that no federal dollars be used to fund a transportation project unless it can be clearly demonstrated that the project would not cause or contribute to new air quality violations of the NAAQS. Conformity requirements were made substantially more rigorous in the 1990 CAAA, and the transportation conformity regulation that details implementation of the new requirements was issued in November 1993.

DOT and the EPA developed guidance for determining conformity of transportation plans, programs, and projects in November 1993 in the Transportation Conformity Rule (*40 Code of Federal Regulations* [*CFR*] *51* and *40 CFR 93*). The demonstration of conformity to the SIP is the responsibility of the local Metropolitan Planning Organization (MPO), which is also responsible for preparing RTPs and associated demonstration of SIP conformity. Section 93.114 of the Transportation Conformity Rule, states that "there must be a currently conforming regional transportation plan and transportation improvement plan at the time of project approval."

The SCAG is the designated federal MPO and state regional transportation planning agency for Los Angeles County. As such, SCAG coordinates the region's major transportation projects and programs, and promotes regionalism in transportation investment decisions.

3.1.1 Statutory Requirements for PM Hot-Spot Analyses

On March 10, 2006, the EPA issued a final transportation conformity rule (40 CFR 51.390 and Part 93) that addresses local air quality impacts in PM10 and PM2.5 nonattainment and maintenance areas. The final rule requires a hot spot analysis to be performed for a POAQC or any other project identified by the PM2.5 and PM10 SIP as a localized air quality concern. Transportation conformity, under CAA section 176(c) (42 U.S.C. 7506(c)), requires that federally supported highway and transportation project activities conform to the State Implementation Plan (SIP). The rule provides criteria and procedures to ensure that these activities will not cause or contribute to new violations, increase the frequency or severity of any existing violations, or delay timely attainment of the relevant NAAQS as described in 40 CFR 93.101.

EPA's final rule, 40 CFR 93.123(b)(1) defines a POAQC as:

(i) New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;

(ii) Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

(iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and

(v) Projects in or affecting locations, areas, or categories of sites which are identified in the PM2.5 or PM10 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

In March 2006, the FHWA and EPA issued a guidance document entitled *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (Federal Highway Administration and U.S. Environmental Protection Agency 2006). This guidance details a qualitative step-by-step screening procedure to determine whether project-related particulate emissions have a potential to cause or contribute to new air quality violations, increase the frequency or severity of existing violations, or delay timely attainment of NAAQS for PM2.5 or PM10. The PM2.5 and PM10 hot spot analyses are required for project-level conformity because the area is in non-attainment for both PM 2.5 and PM10 standards.

For the assessment of PM2.5 and PM10 hotspots, the final rule is that a hotspot analysis is to be performed only for POAQCs. POAQCs are certain highway and transit projects that involve significant levels of diesel traffic or any other project identified in the PM2.5 or PM10 SIP as a localized air quality concern. The following list provides examples of POAQCs.

- A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) where 8% or more of such AADT is diesel truck traffic.
- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal.
- Expansion of an existing highway or other facility that affects a congested intersection (operated at LOS D, E, or F) that has a significant increase in the number of diesel trucks.
- Similar highway projects that involve a significant increase in the number of diesel transit busses and/or diesel trucks.

The list below provides examples of projects that are not of air quality concern.

- Any new or expanded highway project that primarily services gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at LOS D, E, or F.
- An intersection channelization project or interchange configuration project that involves either turn lanes or slots or lanes or movements that are physically separated. These kinds of projects improve freeway operations by smoothing traffic flow and vehicle speeds by improving weave and merge operations, which would not be expected to create or worsen PM2.5 or PM10 violations.
- Intersection channelization projects, traffic circles or roundabouts, intersection signalization projects at individual intersections, and interchange reconfiguration projects that are designed to improve traffic flow and vehicle speeds, and do not involve any increases in idling. Thus, they would be expected to have a neutral or positive influence on PM2.5 or PM10 emissions.

For projects identified as not being a POAQC, qualitative PM2.5 and PM10 hotspot analyses are not required. For these types of projects, state and local project sponsors should briefly document in their project-level conformity determinations that CAA and *40 CFR 93.116* requirements were met without a hotspot analysis, since such projects have been found to not be of air quality concern under *40 CFR 93.123(b)(1)*. Because this analysis assumes the area is classified as a nonattainment area for the federal PM2.5 and PM10 standard, a determination must be made as to whether it would result in a PM2.5 or PM10 hotspot.

Of these five POAQC types identified above, the project most likely falls into the first category of a "new or expanded highway projects that have a significant number of or significant increase in diesel vehicles." As indicated in Table 3-1, traffic volumes along SR-57 and SR-60 are anticipated to exceed the EPA and FHWA's POAQC guideline of 125,000 ADT volumes.

Table 3-1: Mainline ADT on SR-57 and SR-60

SR-57							
Segment	Existing (2009)	2017 Interim			2037 Future		
		Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3
Diamond Bar Blvd and Pathfinder Rd	124,100	125,900	125,900	125,900	151,200	147,600	147,600
Pathfinder Rd and SR-60	119,500	120,700	120,700	120,700	145,200	147,000	147,000
SR-60 on-/off-ramps and SR-60 split	117,600	121,100	122,600	122,600	129,000	133,800	133,800
SR-60 and Temple Ave	105,800	112,700	117,800	117,800	127,800	144,400	144,400
SR-60							
Segment	**Existing (2009)**	**2017 Interim**			**2037 Future**		
		Alt 1	**Alt 2**	**Alt 3**	**Alt 1**	**Alt 2**	**Alt 3**
Brea Canyon Rd and SR-57	126,800	130,800	130,800	130,800	178,200	190,200	190,200
SR-57 and Grand Ave	168,800	178,400	184,000	184,000	199,800	217,800	217,800
Btwn Grand Ave on-/off-ramps	226,800	232,400	238,500	238,500	244,800	264,600	264,600
Grand Ave and SR-57 split	226,000	241,300	249,700	249,700	275,400	302,400	302,400
SR-57 split and Diamond Bar Blvd	125,100	132,600	132,500	132,500	149,100	149,100	149,100
Diamond Bar Blvd and Philips Ranch Rd	130,600	139,500	142,000	142,000	159,300	167,400	167,400
Adapted from: KOA Corporation 2011.							

In addition, heavy truck traffic volumes on the SR-57/SR-60 mainline are expected to exceed the POAQC guideline of 10,000 truck ADT, on multiple segments under both build alternatives at horizon year 2037, as shown in Table 3-2.

Table 3-2: Mainline Truck ADT Volumes on SR-57 and SR-60

SR-57							
Segment	Existing (2009)	2017 Interim			2037 Future		
		Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3
Diamond Bar Blvd and Pathfinder Rd	6,577	6,673	6,673	6,673	8,014	7,823	7,823
Pathfinder Rd and SR-60	6,453	6,518	6,518	6,518	7,841	7,938	7,938
SR-60 on-/off-ramps and SR-60 split	4,234	4,360	4,414	4,414	4,644	4,817	4,817
SR-60 and Temple Ave	6,560	6,987	7,304	7,304	7,924	8,953	8,953
SR-60							
Segment	Existing (2009)	2017 Interim			2037 Future		
		Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3
Brea Canyon Rd and SR-57	8,622	8,894	8,894	8,894	12,118	12,934	12,934
SR-57 and Grand Ave	10,297	10,882	11,224	11,224	12,188	13,286	13,286
Btwn Grand Ave on-/off-ramps	15,196	15,571	15,980	15,980	16,402	17,728	17,728
Grand Ave and SR-57 split	14,916	15,926	16,480	16,480	18,176	19,958	19,958
SR-57 split and Diamond Bar Blvd	8,507	9,017	9,010	9,010	10,139	10,139	10,139
Diamond Bar Blvd and Philips Ranch Rd	8,620	9,207	9,372	9,372	10,514	11,048	11,048
Adapted from: KOA Corporation 2011.							

With respect to affected arterial streets, total ADT volumes and truck ADT volumes would remain well below the POAQC guidelines of 125,000 ADT and 10,000 truck ADT, respectively. Arterial street ADT and truck ADT volumes are shown below in Table 3-3 and Table 3-4, respectively.

Table 3-3: Arterial ADT along Grand Avenue and Golden Springs Road

Grand Avenue							
		2017 Interim			2037 Future		
Segment	**Existing**	**Alt 1 (No Project)**	**Alt 2**	**Alt 3**	**Alt 1 (No Project)**	**Alt 2**	**Alt 3**
Grand Ave north of SR-60 WB on-/off-ramps	29,800	37,600	40,800	40,800	55,000	65,300	65,300
Grand Ave btwn SR-60 WB on-ramp and EB ramps	28,100	37,600	36,700	36,700	58,600	55,700	55,700
Grand Ave btwn SR-60 EB ramps and Golden Springs Rd	27,600	31,800	33,300	33,300	41,000	46,000	46,000
Grand Ave btwn Golden Springs Rd and Chardonay Dr	25,100	28,500	29,400	29,400	36,300	39,100	39,100
Golden Springs Drive							
		2017 Interim			**2037 Future**		
Segment	**Existing**	**Alt 1 (No Project)**	**Alt 2**	**Alt 3**	**Alt 1 (No Project)**	**Alt 2**	**Alt 3**
Golden Springs Rd btwn Grand Ave and Lavender Dr	24,100	27,700	26,800	26,800	35,500	33,000	33,000
Golden Springs Rd btwn Grand Ave and Racquet Club Dr	16,800	19,400	18,700	18,700	25,500	23,200	23,200
Adapted from: KOA Corporation 2011.							

Table 3-4: Arterial Truck ADT Volumes along Grand Avenue and Golden Springs Road

Grand Avenue							
		2017 Interim			2037 Future		
Segment	Existing	Alt 1 (No Project)	Alt 2	Alt 3	Alt 1 (No Project)	Alt 2	Alt 3
Grand Ave north of SR-60 WB on-/off-ramps	2,980	3,760	4,080	4,080	5,500	6,530	6,530
Grand Ave btwn SR-60 WB on-ramp and EB ramps	2,810	3,760	3,670	3,670	5,860	5,570	5,570
Grand Ave btwn SR-60 EB ramps and Golden Springs Rd	552	636	666	666	820	920	920
Grand Ave btwn Golden Springs Rd and Chardonay Dr	502	570	588	588	726	782	782
Golden Springs Drive							
		2017 Interim			2037 Future		
Segment	Existing	Alt 1 (No Project)	Alt 2	Alt 3	Alt 1 (No Project)	Alt 2	Alt 3
Golden Springs Rd btwn Grand Ave and Lavender Dr	482	554	536	536	710	660	660
Golden Springs Rd btwn Grand Ave and Racquet Club Dr	336	388	374	374	510	464	464
Adapted from: KOA Corporation 2011.							

Because SR-57/SR/60 mainline ADT and truck ADT volumes are anticipated to exceed POAQC guideline criteria, the project is considered to be a POAQC. Consistent with the FHWA and EPA's 2006 qualitative hot spot analysis guidance, the proposed project was evaluated to assess whether the project would cause or contribute to any new localized PM2.5 or PM10 violations; or increase the frequency or severity of any existing violations; or delay timely attainment of the PM10 or PM2.5 national ambient air quality standards (NAAQS).

3.1.2 National Ambient Air Quality Standards

PM2.5 NAAQS:

- 24-hour Standard: The old 1997 standard of 65 $\mu g/m^3$ was revised in 2006 to 35 $\mu g/m^3$
- Annual Standard: 15 $\mu g/m^3$

PM10 NAAQS:

- 24-hour Standard: 150 $\mu g/m^3$

The South Coast Air Basin (SCAB), the basin in which the City of Industry portion of Los Angeles County resides, was designated as a serious nonattainment area from its previous designation of moderate nonattainment area for the federal PM10 standard on February 8, 1993. The SCAB was classified as a nonattainment area on April 5, 2005 for the federal PM2.5 standard (South Coast Air Quality Management District 2003 & South Coast Air Quality Management District 2007).

The 24-hour PM10 standard is based on the number of days in the calendar year with 24-hour recorded concentrations greater than 150$\mu g/m^3$; the number of days must be equal to or less than one. The annual PM10 standard is no longer used for determining federal attainment status. The 24-hour PM2.5 standard is based on 3-year average of the 98th percentile of 24-hour recorded concentrations; the annual standard is based on 3-year average of the annual arithmetic mean PM2.5 recorded concentrations. A PM2.5 hot-spot analysis must consider both standards, unless it is determined for a given area that meeting the controlling standard would ensure that CAA requirements are met for both standards. The interagency consultation process should be used to discuss how the qualitative PM2.5 hot-spot analysis meets statutory and regulatory requirements for both standards, depending on the factors that are evaluated for a given project.

3.2 Surrounding Land Uses

Caltrans defines sensitive receptors (aka: sensitive land uses) as schools, medical centers and similar healthcare facilities, child care facilities, parks, and playgrounds (California Department of Transportation 2008). The area surrounding the project site consists of open space and residential uses west and northwest of the SR-57/SR-60 confluence; residential uses west and northwest of the southwest project limit; residential uses northwest, north, and east of the northeast project limit; and recreational uses (a golf course) south of the SR-57/SR-60 confluence. There is a fast-food restaurant and a former auto dealership that is no longer in business to the southwest of the Grand Avenue at SR-60 westbound off-ramp intersection, and there is a Target store to the southwest of the Grand Avenue at Golden Springs Road intersection. The fast-food restaurant has a former children's playground area that faces the freeway. The playground area has been closed for some time and will not be reopened, according to restaurant management (Aragues pers. comm.). The restaurant manager said on a site visit on June 2, 2009, and a subsequent telephone conversation on June 12, 2009, that no replacement playground equipment or other sensitive uses are planned for the area currently occupied by the playground.

The closest sensitive receptors to the project area are residences located approximately 100 feet northwest of the SR-57/SR-60 confluence; residences approximately 150 feet southwest of the northeast project limit; a private preschool, La Petite Academy, located approximately 200 feet south of the Grand Avenue at Golden Springs Road intersection and approximately 50 feet west of Grand Avenue, and; the Diamond Bar Montessori Academy located approximately 200 feet to the southwest of SR-60 about 0.20 miles northeast of the SR-57/SR-60 split. There are also numerous schools located within 0.50 miles of the project site. Some of the residences northwest of the SR-57/SR-60 confluence are located up on a hill, and residences in this area that are not elevated from the freeway are protected by a sound wall. The residences southwest of the northeast project limit and the Diamond Bar Montessori Academy southwest of SR-60 about 0.20 miles northeast of the SR-57/SR-60 split are protected from the freeway by dense trees. The La Petite Academy is not protected from Grand Avenue. Refer to Figure 3-1 for general locations of sensitive receptors in the project vicinity. For clarification, although the large area southwest of the eastern limit of the SR-57/SR-60 confluence is designated “schools,” SCAQMD and various commercial uses are also located in this area. The area is designated “schools” to show that this sensitive-receptor category is present throughout the area, which includes California Intercontinental University, the University of Phoenix – Diamond Bar Learning Center, the University of California, and Towne and Country Preschool and Infant Care Center.

3.3 Hot-Spot Analysis

The final Transportation Conformity Rule requires a hot spot analysis to be performed for POAQC, while projects identified as not being a POAQC are not required to undergo a hot spot analysis. As indicated above, data from Table 3-1 and Table 3-2 indicates that the project is a POAQC based on roadway traffic and truck ADT. As such, and a qualitative PM2.5 and PM10 hot spot analysis consistent with FHWA and EPA’s 2006 qualitative hot spot analysis guidance is required.

A hot-spot analysis is defined in Section 93.101 of 40 CFR as an estimation of likely future localized pollutant concentrations and a comparison of those concentrations to the relevant air quality standards. A hot-spot analysis assesses the air quality impacts on a project-level – a scale smaller than an entire nonattainment or maintenance area, such as for congested roadway intersections and highways or transit terminals. Such an analysis is a means of demonstrating that a transportation project meets the federal CAA conformity requirements to support state and local air quality goals with respect to achieving the attainment status in a timely manner. When a hot-spot analysis is required, it is included within the project-level conformity determination that is made by FHWA or the Federal Transit Administration (FTA).

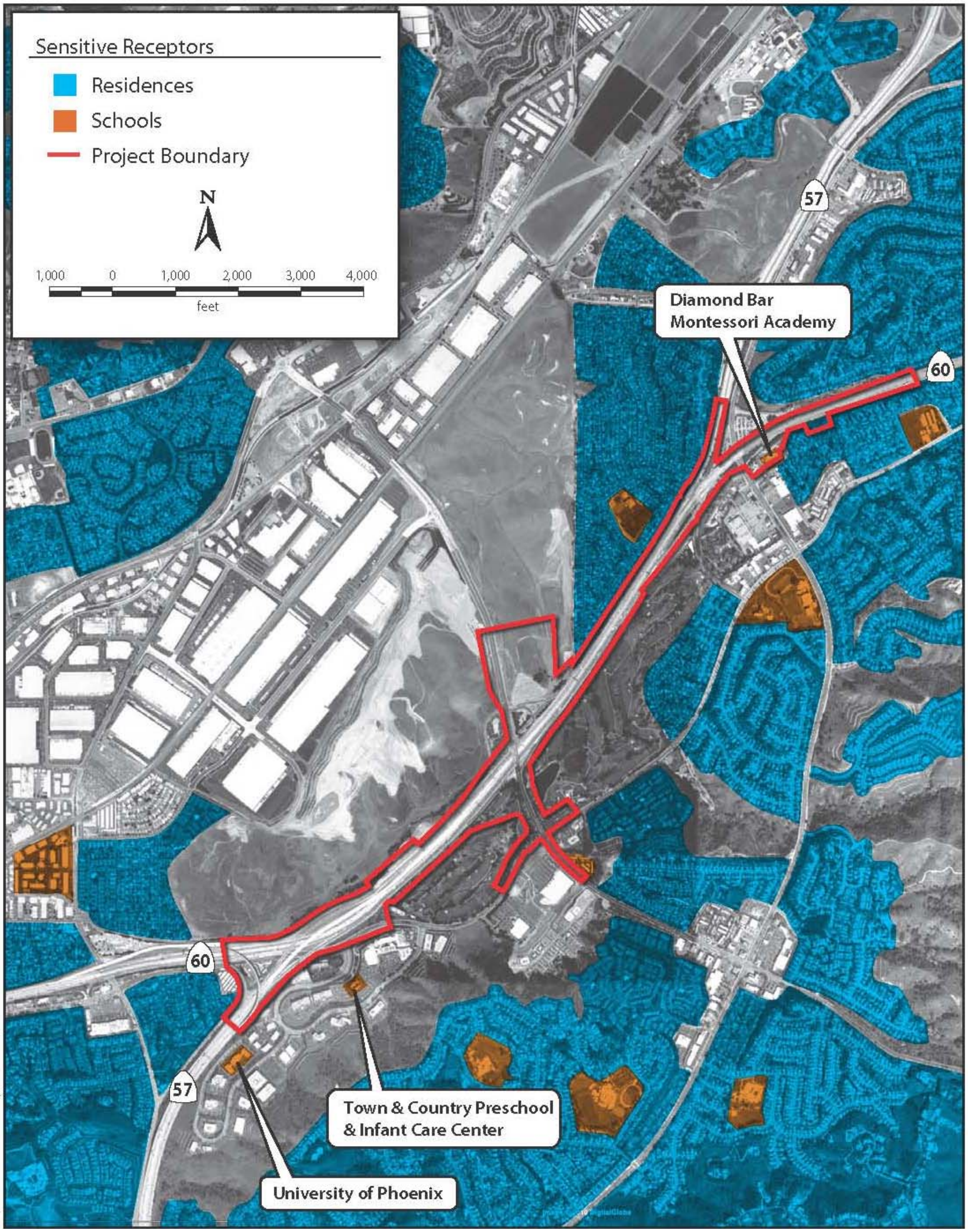
3.3.1 Analysis Methodology and Types of Emissions Considered

The EPA and FHWA established in the *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (Federal Highway Administration and U.S. Environmental Protection Agency 2006) the following two methods for completing a PM2.5 and PM10 hot-spot analysis:

1. Comparison to another location with similar characteristics – (pollutant trend within the air basin)
2. Air quality studies for the proposed project location – (ambient PM trend analysis in the project area)

This analysis uses a combined approach to demonstrate that the proposed project would not result in a new or worsened PM2.5 or PM10 violation. Method 1 was used to establish that the proposed project area will meet the NAAQS. Method 2 was used to demonstrate that implementation of the proposed project would not delay attainment of the NAAQS.

Figure 3-1: Air Quality Sensitive Receptors



The analysis was based on directly emitted PM2.5 and PM10 emissions, including tailpipe, brake wear, and tire wear. Re-entrained road dust is also included in the qualitative analysis, as PM10 re-entrained dust must be considered per conformity requirements and PM2.5 re-entrained road dust must be considered because the California Air Resources Board (ARB) has determined that re-entrained road dust is a significant contributor to ambient PM2.5 concentrations in the region (South Coast Air Quality Management District 2007).

Secondary particles formed through PM2.5 and PM10 precursor emissions from a transportation project take several hours to form in the atmosphere, giving emissions time to disperse beyond the immediate project area of concern for localized analyses; therefore, they were not considered in this hot-spot analysis. Secondary emissions of PM2.5 and PM10 are considered as part of the regional emission analysis prepared for the conforming RTP and Federal Transportation Improvement Program (FTIP).

Project construction is anticipated to begin in the summer of 2014 and end by the fall of 2017. As such, construction duration would be less than five years. In addition, the project must comply with South Coast Air Quality Management District (SCAQMD) construction-related fugitive dust control measures (Rule 403), which will ensure that fugitive dust from construction activities are minimized. Consequently, construction-related PM2.5 and PM10 emissions were not included in the hot spot analysis per 40 CFR 93123(c)(5).

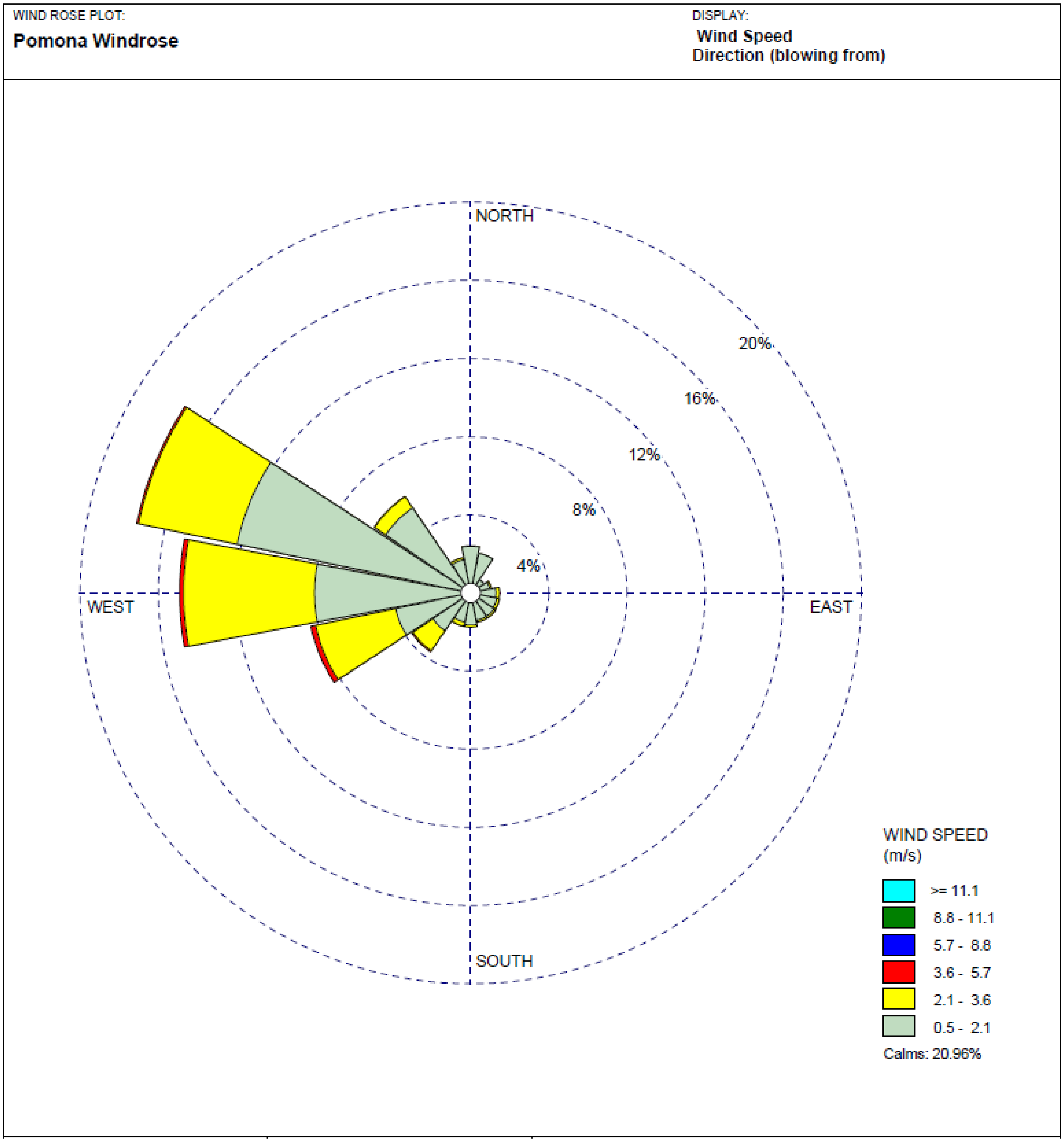
3.3.2 Air Quality Trend Analysis

The Pomona monitoring station does not monitor PM; therefore, local air quality data was obtained from the Azusa monitoring station (ARB Number 70060), which is the nearest monitoring station that monitors PM10 and PM2.5 concentrations. Local meteorological data was obtained from the Pomona weather station, located approximately 4 miles northeast of the project corridor. In addition, the Azusa weather station is located approximately ten miles northwest of the project corridor. Data from both the Pomona and Azusa weather stations have been included to characterize wind patterns in the project area. In addition to monitoring data, this analysis presents project-level PM2.5 and PM10 emissions in the future (2017 and 2037) years to help characterize the project’s impact on total PM emissions generated in the project area and the impacts of the project and the likelihood of these impacts interacting with the ambient PM levels to cause PM hot spots.

3.3.2.1 Climate and Topography

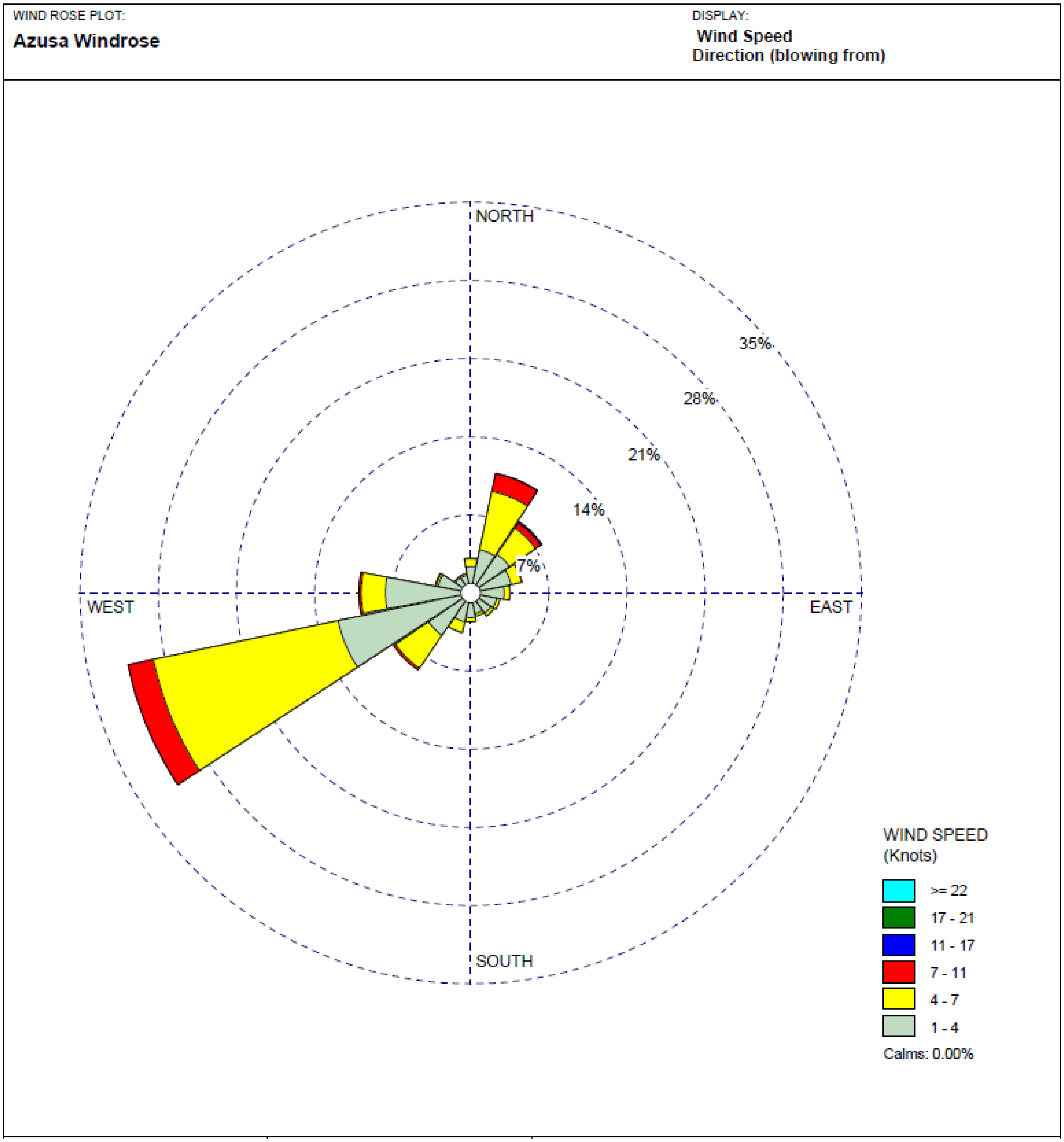
The proposed project lies within the 6,745 square mile SCAB. The SCAB is bounded by the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east and the Pacific Ocean to the West. The light winds and shallow vertical atmospheric mixing characteristic to the SCAB are present due to the region’s terrain and geographical features. These characteristics contribute to the severity of air pollution issues in the SCAB. Figure 3-2 and Figure 3-3 indicate the predominant wind direction in the region based on meteorological data from the Pomona and Azusa monitoring stations discussed above (South Coast Air Quality Management District 2009a and b).

Figure 3-2: Predominant Wind Direction at Pomona Station



Source: South Coast Air Quality Management District 2009a

Figure 3-3: Predominant Wind Direction at Azusa Station



Source: South Coast Air Quality Management District 2009b

3.3.2.2 Trends in Monitored Particulate Matter Concentrations

As required by the applicable transportation conformity regulations for PM, a trend analysis has been conducted and compared to the NAAQS.

PM2.5

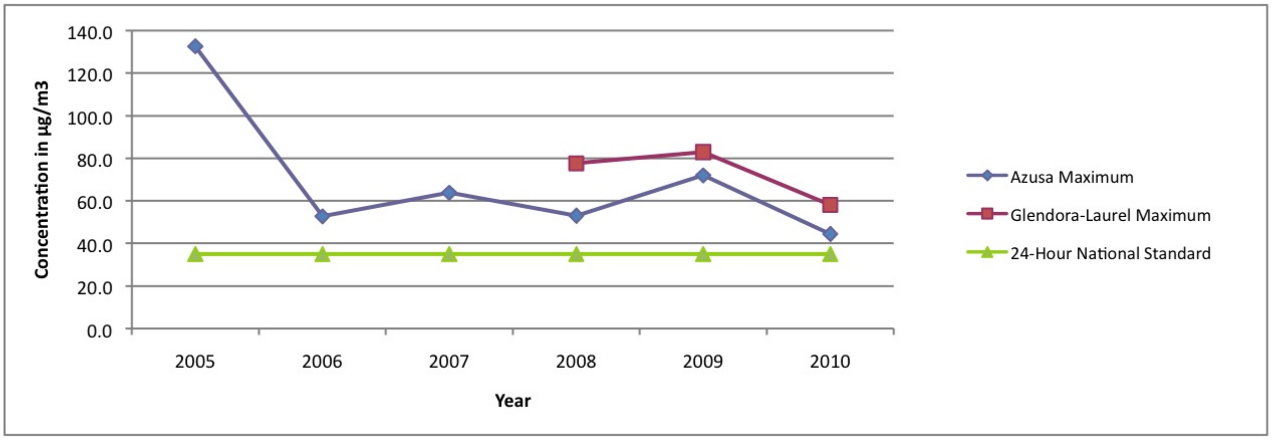
Monitored PM2.5 concentrations for the Azusa and Glendora-Laurel monitoring stations are presented in Table 3-5. Monitored data presented in Table 3-5 is for the three-year period from 2008 to 2010, the last year which complete data is available.

Table 3-5: Ambient PM2.5 Monitoring Data (μg/m^3) at the Azusa and Glendora-Laurel Monitoring Stations

Metric	2005	2006	2007	2008	2009	2010
Asuza						
Maximum 24-Hour Concentration	132.6	52.7	63.8	53.0	72.0	44.4
24-Hour Standard 98th Percentile	53.2	38.4	49.2	34.8	42.9	35.4
Exceeds the federal 24-hour standard (35 μg/m^3)?	Yes	Yes	Yes	Yes	Yes	Yes
Number of days federal standard exceeded?	18	8	19	5	6	1
National annual average	16.9	15.4	15.7	14.0	NA	NA
Exceeds the federal annual average standard (15.0 μg/m^3)?	Yes	Yes	Yes	No	NA	NA
*Glendora-Laurel***						
Maximum 24-Hour Concentration	NA	NA	NA	77.6	82.9	58.1
24-Hour Standard 98th Percentile	NA	NA	NA	NA	NA	NA
Exceeds the federal 24-hour standard (35 μg/m^3)?	NA	NA	NA	NA	NA	NA
Number of days federal standard exceeded?	NA	NA	NA	NA	NA	NA
National annual average	14.3	14.3	14.3	14.3	NA	NA
Exceeds the federal annual average standard (15.0 μg/m^3)?	NA	NA	NA	NA	NA	NA
** Glendora-Laurel Station came online in 2008. Source: California Air Resources Board 2011, compiled by ICF International January 2012.						

As indicated in Table 3-5 and Figure 3-4, below, maximum 24-hour PM2.5 concentrations at the both the Azusa and Glendora-Laurel monitoring stations have been somewhat erratic from year to year. For example, maximum concentrations at both stations were lower in 2010 than in 2008. However, both stations experienced concentrations in 2009 that exceeded 2008 measurements. While the national 24-hour PM2.5 standard has been exceeded at both stations in past years, Table 3-2 shows that the Azusa station measured one exceedance of the national standard in 2010, compared to 19 exceedances in 2007. In addition, the annual average concentration at the both the Azusa Glendora-Laurel stations did not exceed the national average national standard in 2008. No data is available to ascertain the number of daily exceedances for the Glendora-Laurel station.

Figure 3-4: PM2.5 24-hour Concentrations at the Azusa and Glendora-Laurel Stations



Source: California Air Resources Board 2011, compiled by ICF International January 2012.

PM10

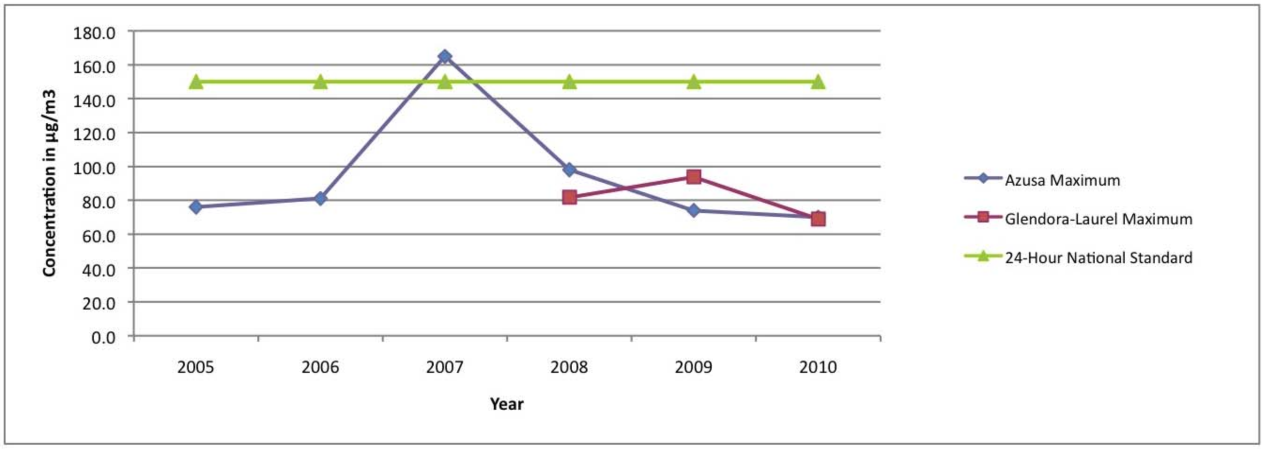
Monitored PM10 concentrations for the Azusa and Glendora-Laurel monitoring stations are presented in Table 3-6. Monitored data presented in Table 3-6 is for the three-year period from 2008 to 2010, the last year which complete data is available.

As indicated in Table 3-6 and Figure 3-5, below, maximum 24-hour PM10 concentrations at the Azusa monitoring station have steadily decreased from between 2008 (98.0 µg/m^3) and 2010 (70.0 µg/m^3). Table 3-6 and Figure 3-5 also show that at the Glendora-Laurel monitoring station, 24-hour PM10 concentrations have decreased from 81.7 µg/m^3 in 2008 to 69.8 µg/m^3 in 2010. Maximum values at both stations have remained below the current national standard of 150 µg/m^3.

Table 3-6: Ambient PM10 Monitoring Data at the Azusa and Glendora-Laurel Monitoring Stations

	2005	2006	2007	2008	2009	2010
Azusa						
Maximum 24-Hour Concentration	76.0	81.0	165.0	98.0	74.0	70.0
Exceeds the federal 24-hour standard (150 µg/m^3)?	No	No	Yes	No	No	No
*Glendora-Laurel***						
Maximum 24-Hour Concentration	NA	NA	NA	81.7	93.8	68.9
Exceeds the federal 24-hour standard (150 µg/m^3)?	NA	NA	NA	No	No	No
** Glendora-Laurel Station came online in 2008. Source: California Air Resources Board 2011, compiled by ICF International January 2012.						

Figure 3-5: PM10 24-hour Concentrations at the Azusa and Glendora-Laurel Stations



Source: California Air Resources Board 2011, compiled by ICF International January 2012.

3.3.2.3 Future Trends

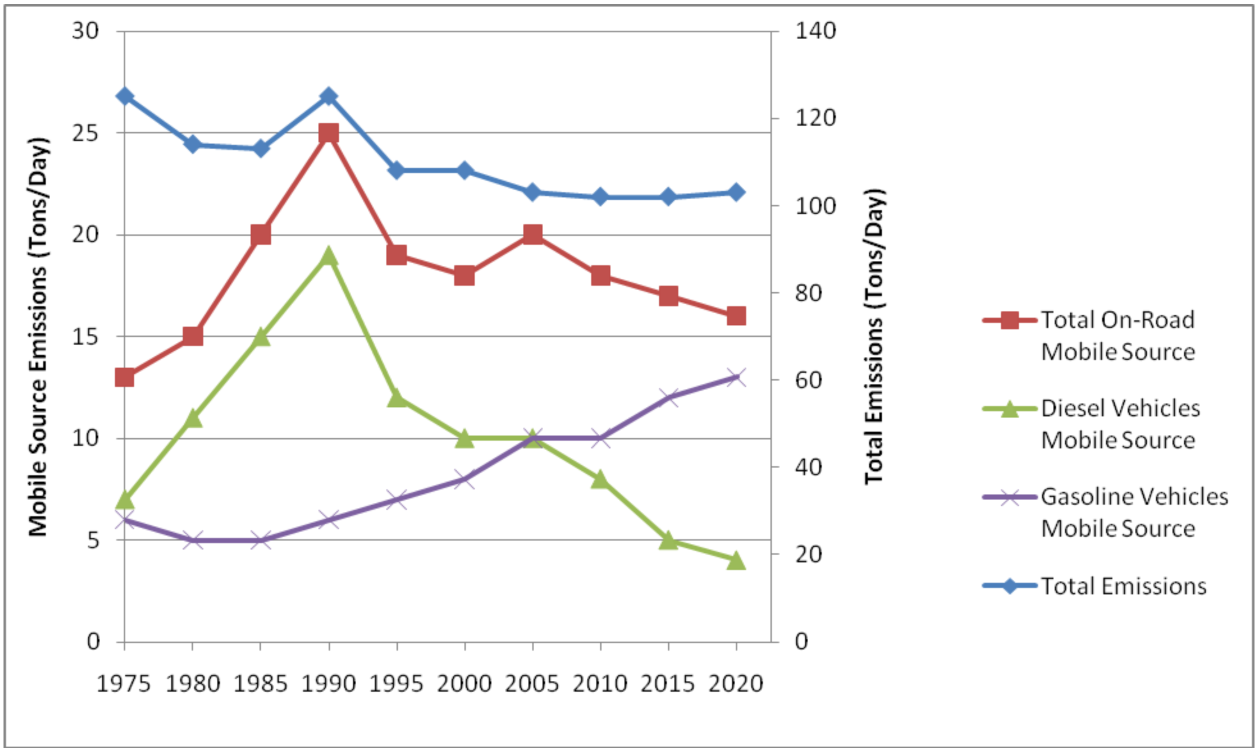
Emission trend data for the SCAB published in the 2009 edition of *The California Almanac of Emissions and Air Quality* published by the ARB was used to provide an estimate of potential PM2.5 and PM10 trends in the vicinity of the project area (California Air Resources Board 2009). While the ARB's Almanac does not provide emission trend data on the county level, the regional trend data can be used to provide insight on the general trends of air quality in the project area, as implementation of emission standards and control requirements that have an effect on regional pollutant concentrations are likely to result in similar trends at the local level.

Table 3-7 and Figure 3-6, below, present PM2.5 emission trends in the SCAB for the years 1975-2020 based on ARB Almanac data (California Air Resources Board 2009).

Table 3-7: PM2.5 Emission Trends in South Coast Air Basin (tons per day)

Year	Total Emissions	Total On-Road Mobile Source	Diesel Vehicles Mobile Source	Gasoline Vehicles Mobile Source
1975	125	13	7	6
1980	114	15	11	5
1985	113	20	15	5
1990	125	25	19	6
1995	108	19	12	7
2000	108	18	10	8
2005	103	20	10	10
2010	102	18	8	10
2015	102	17	5	12
2020	103	16	4	13
Source: California Air Resources Board 2009				

Figure 3-6: PM2.5 Emission trends in South Coast Air Basin (tons per day)



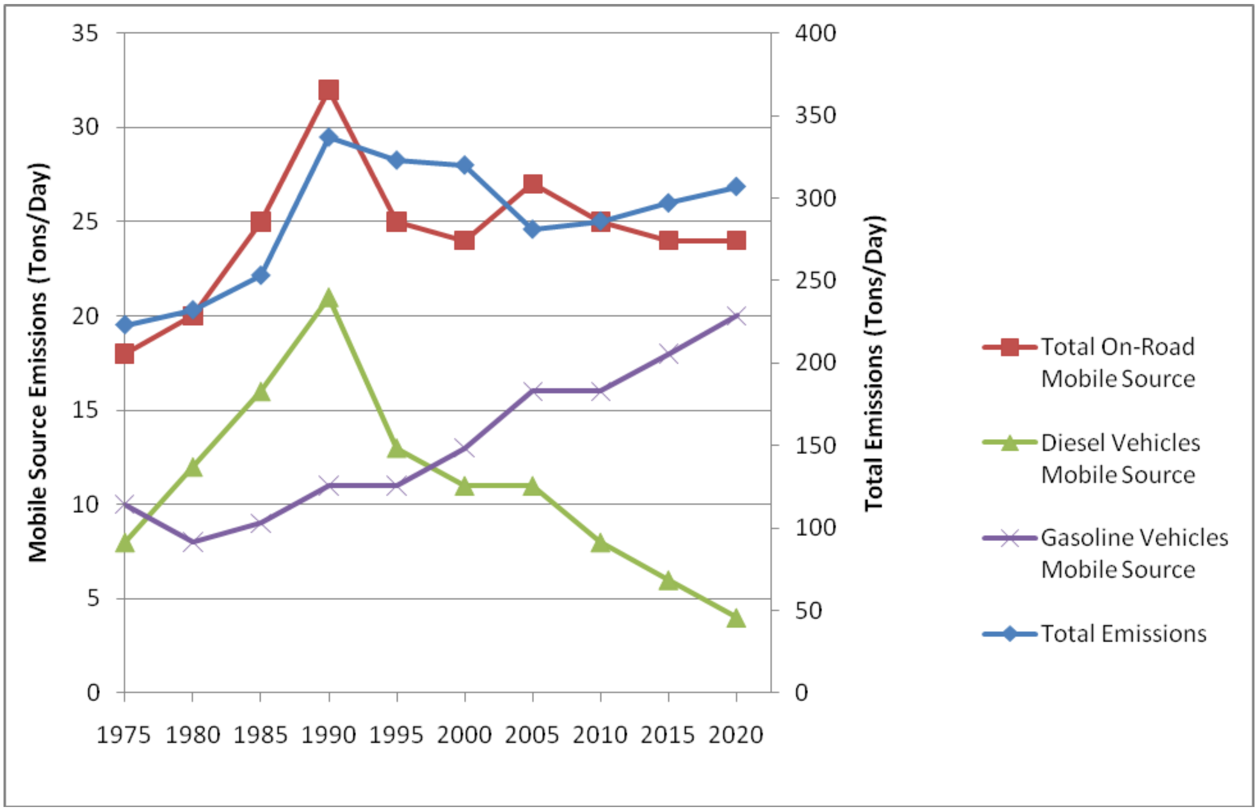
Source: California Air Resources Board 2009, compiled by ICF International October 2011.

Table 3-8 and Figure 3-7, below, present PM10 emission trends in the SCAB for the years 1975-2020 based on ARB Almanac data (California Air Resources Board 2009).

Table 3-8: PM10 Emission Trends in South Coast Air Basin (tons per day)

Year	Total Emissions	Total On-Road Mobile Source	Diesel Vehicles Mobile Source	Gasoline Vehicles Mobile Source
1975	223	18	8	10
1980	232	20	12	8
1985	253	25	16	9
1990	337	32	21	11
1995	323	25	13	11
2000	320	24	11	13
2005	281	27	11	16
2010	286	25	8	16
2015	297	24	6	18
2020	307	24	4	20
Source: California Air Resources Board 2009				

Figure 3-7: PM10 Emission trends in the South Coast Air Basin (tons per day)



Source: California Air Resources Board 2009, compiled by ICF International October 2011

The emissions trends presented above in Table 3-7 (PM2.5) and Table 3-8 (PM10) and Figure 3-6 (PM2.5) and Figure 3-7 (PM10) indicate that total on-road emissions are expected to maintain a decreasing trend through 2020, with increases in emissions from on-road gasoline vehicles offset by substantial decreases in emissions from on-road diesel vehicles. Emissions of directly emitted PM2.5 and PM10 from diesel motor vehicles have been decreasing since their peak levels in 1990 even though population and vehicles miles traveled (VMT) are increasing due to adoption of more stringent emission standards.

Total on-road PM2.5 and PM10 emissions increased between 1975 and 1990, the year in which emissions peaked (25 tons/day for PM2.5 and 32 tons/day for PM10). Total on-road emissions decreased between 1990 and 2000, increased in 2005, and are projected to show a decreasing trend through 2020.

3.3.3 Population and Traffic Growth

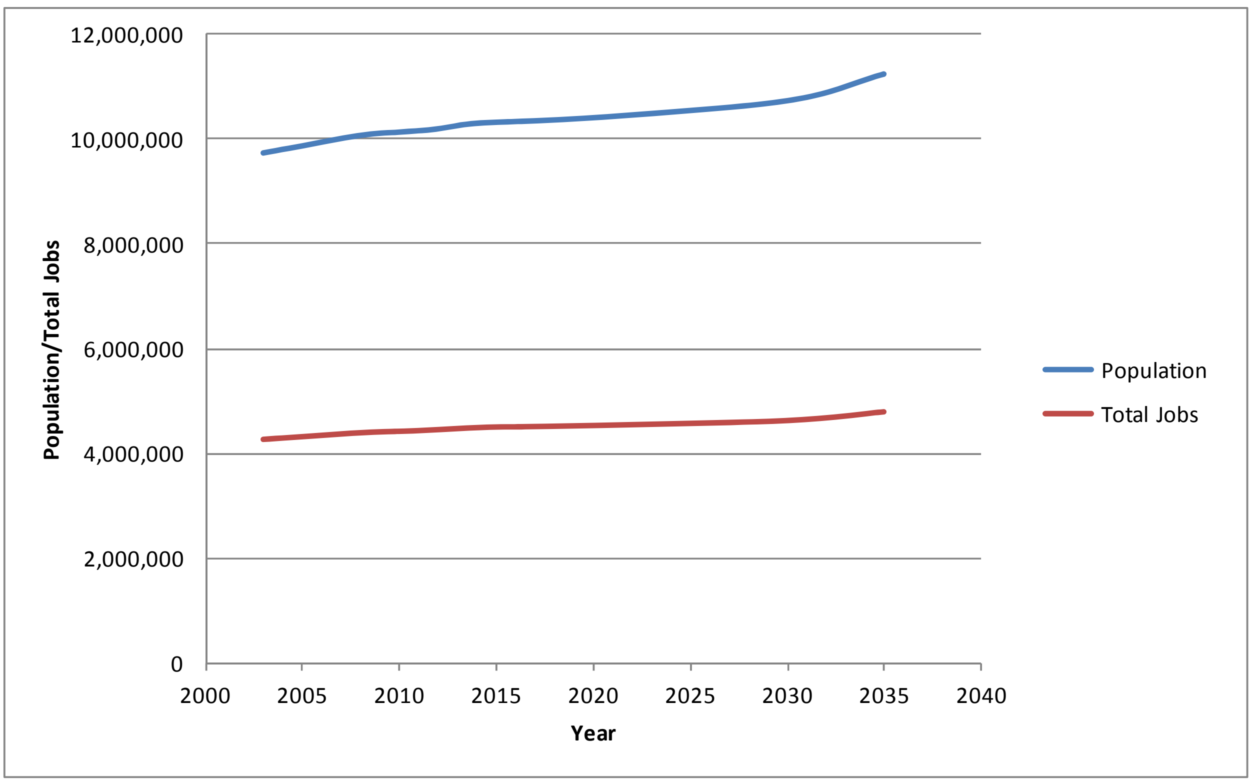
3.3.3.1 Regional Population Growth

As indicated above, total PM2.5 and PM10 emissions in the SCAB are projected to increase slightly through 2020, although total on-road emissions are expected to decrease through 2020. This trend is despite the fact that Los Angeles County population residing in the SCAB is anticipated to increase from 9,716,000 in 2003 to 10,721,000 in 2020 and jobs are anticipated to increase from 4,270,000 in 2003 to 4,626,000 in 2020, as indicated in Table 3-9 and Figure 3-8.

Table 3-9: SCAG Regional Population and Employment Projections for Los Angeles County

	2003	2008	2010	2012	2014	2020	2030	2035
Population	9,716,000	10,055,000	10,117,000	10,179,000	10,288,000	10,395,000	10,721,000	11,236,000
Total Jobs	4,270,000	4,395,000	4,423,000	4,450,000	4,493,000	4,532,000	4,626,000	4,791,000
Source: Southern California Association of Governments 2008								

Figure 3-8: SCAG Regional Population and Housing Projections



Source: Southern California Association of Governments 2008

3.3.3.2 Regional Traffic Growth

With population and employment growth expected to occur regionally (Table 3-9 and Figure 3-8), it is anticipated that this anticipated growth could result in increased traffic within the project area. Modeled traffic volumes and operating conditions were obtained from the traffic data prepared by the project traffic engineers, KOA Corporation. Peak-period and off-peak period volumes were provided by 5-mph speed-bin. Summaries of project-area VMT apportioned into 5-mph speed-bins for the baseline/existing condition (2009), opening year (2017) and horizon year (2037) are provided below in Table 3-10 (Peak Period Summary), Table 3-11 (Non-Peak Period Summary and Table 3-12 (Peak Period plus Non-Peak Period Summary). VMT data included vehicle activity for affected roadways in the immediate project area.

Table 3-10: Peak Period Vehicle Miles Traveled by Speed

Speed Bin	Existing 2009	Opening Year 2017			Horizon Year 2037		
		No-Build	Alt 2	Alt 3	No-Build	Alt 2	Alt 3
5	-	-	-	-	6,039	-	-
10	2,814	2,522	4,747	2,511	8,747	6,203	4,521
15	3,232	21,568	27,623	22,489	55,454	39,115	33,509
20	46,377	150,887	33,557	32,010	159,645	50,525	59,534
25	106,642	126,771	121,544	125,782	295,064	227,367	222,194
30	368,227	448,362	416,178	422,302	447,627	437,396	443,609
35	371,147	283,481	281,204	231,124	362,647	203,107	203,107
40	159,467	197,935	179,847	89,865	146,199	202,994	202,994
45	19,543	10,455	12,168	102,150	150,401	14,247	14,247
50	24,463	142,576	53,187	53,187	97,595	63,553	63,553
55	62,650	32,471	-	-	10,695	-	-
60	45,646	7,880	9,212	-	53,008	231,840	341,243
65	659,186	573,658	904,983	964,275	501,568	857,489	748,087
70	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-
Total	1,869,394	1,998,566	2,044,250	2,045,695	2,294,689	2,333,836	2,336,598
Adapted from: KOA Corporation 2011.							

Table 3-11: Non-Peak Period Vehicle Miles Traveled by Speed

Speed Bin	Existing 2009	Opening Year 2017			Horizon Year 2037		
		No-Build	Alt 2	Alt 3	No-Build	Alt 2	Alt 3
5	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-
15	-	-	-	-	4,026	4,034	4,034
20	3,637	145,192	3,992	3,773	34,482	41,505	10,194
25	21,809	25,866	24,164	24,384	51,634	30,608	85,413
30	61,906	87,722	73,525	73,525	74,687	103,829	119,086
35	152,281	195,665	149,707	150,997	264,736	201,567	248,128
40	233,981	410,173	312,921	251,493	574,954	346,298	264,961
45	132,693	106,582	147,421	98,222	128,833	98,436	97,491
50	9,438	138,674	18,359	50,807	-	-	-
55	81,400	33,570	-	32,452	82,067	-	-
60	149,112	7,730	169,283	176,535	-	94,148	254,867
65	895,682	646,456	857,350	895,826	720,849	970,184	809,465
70	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-
Total	1,741,939	1,797,630	1,756,722	1,758,014	1,936,268	1,890,609	1,893,639
Adapted from: KOA Corporation 2011.							

Table 3-12: Peak Plus Non-Peak Period Vehicle Miles Traveled by Speed

Speed Bin	Existing 2009	Opening Year 2017			Horizon Year 2037		
		No-Build	Alt 2	Alt 3	No-Build	Alt 2	Alt 3
5	-	-	-	-	6,039	-	-
10	2,814	2,522	4,747	2,511	8,747	6,203	4,521
15	3,232	21,568	27,623	22,489	59,480	43,149	37,543
20	50,014	296,079	37,549	35,783	194,127	92,030	69,728
25	128,451	152,637	145,708	150,166	346,698	257,975	307,607
30	430,133	536,084	489,703	495,827	522,314	541,225	562,695
35	523,428	479,146	430,911	382,121	627,383	404,674	451,235
40	393,448	608,108	492,768	341,358	721,153	549,292	467,955
45	152,236	117,037	159,589	200,372	279,234	112,683	111,738
50	33,901	281,250	71,546	103,994	97,595	63,553	63,553
55	144,050	66,041	-	32,452	92,762	-	-
60	194,758	15,610	178,495	176,535	53,008	325,988	596,110
65	1,554,868	1,220,114	1,762,333	1,860,101	1,222,417	1,827,673	1,557,552
70	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-
Total	3,611,333	3,796,196	3,800,972	3,803,709	4,230,957	4,224,445	4,230,237
Adapted from: KOA Corporation 2011.							

Roadway and Intersection Level of Service

Intersection operation data for the proposed project was provided by the project traffic engineers, KOA Corporation (KOA Corporation 2011). Table 3-13 summarizes intersection operations for existing (2009) conditions, interim-year (2017) with- and without-project conditions, and design-year (2037) with- and without-project conditions. As shown in Table 3-13, the proposed project alternatives improve LOS in most cases, or LOS remains the same. In addition, average delays are estimated to improve substantially.

Table 3-13: Summary of Intersection Operations for the Proposed Project

Existing (2009)						
	AM Peak Hour			PM Peak Hour		
Intersection	Queue Length (feet)	Delay[c]	LOS	Queue Length (feet)	Delay[c]	LOS
Grand Ave at SR-60 westbound off-ramp[a]	283	42.2	D	192	20.1	C
Grand Ave at SR-60 eastbound off-ramp[a]	220	16.2	B	88	11.3	B
Grand Ave at Golden Springs Dr[b]	349	38.6	D	306	54.0	D
Interim Year (2017)						
No Build (Alternative 1)						
	AM Peak Hour			PM Peak Hour		
Intersection	Queue Length (feet)	Delay[c]	LOS	Queue Length (feet)	Delay[c]	LOS
Grand Ave at SR-60 westbound off-ramp[a]	461	29.7	C	303	33.4	C
Grand Ave at SR-60 eastbound off-ramp[a]	257	27.8	C	87	17.6	B
Grand Ave at Golden Springs Dr[b]	466	54.9	D	433	48.3	D
Alternative 2						
	AM Peak Hour			PM Peak Hour		
Intersection	Queue Length (feet)	Delay[c]	LOS	Queue Length (feet)	Delay[c]	LOS
Grand Ave at SR-60 westbound off-ramp[a]	331	21.0	C	149	17.9	B
Grand Ave at SR-60 eastbound off-ramp[a]	186	15.9	B	101	12.6	B
Grand Ave at Golden Springs Dr[b]	493	35.7	D	400	38.7	D
Alternative 3						
	AM Peak Hour			PM Peak Hour		
Intersection	Queue Length (feet)	Delay[c]	LOS	Queue Length (feet)	Delay[c]	LOS
Grand Ave at SR-60 westbound off-ramp[a]	285	20.2	C	144	17.7	B
Grand Ave at SR-60 eastbound off-ramp[a]	201	9.8	A	89	6.2	A
Grand Ave at Golden Springs Dr[b]	250	31.3	C	274	31.6	C
Design Year (2037)						
No Build (Alternative 1)						
	AM Peak Hour			PM Peak Hour		
Intersection	Queue Length (feet)	Delay[c]	LOS	Queue Length (feet)	Delay[c]	LOS
Grand Ave at SR-60 westbound off-ramp[a]	1,005	99.7	F	700	178.9	F
Grand Ave at SR-60 eastbound off-ramp[a]	628	81.9	F	268	84.3	F
Grand Ave at Golden Springs Dr[b]	615	111.6	F	673	103.6	F

Alternative 2						
	AM Peak Hour			PM Peak Hour		
Intersection	Queue Length (feet)	Delay[c]	LOS	Queue Length (feet)	Delay[c]	LOS
Grand Ave at SR-60 westbound off-ramp[a]	508	35.7	D	361	46.8	D
Grand Ave at SR-60 eastbound off-ramp[a]	635	49.6	D	432	55.4	E
Grand Ave at Golden Springs Dr[b]	523	50.6	D	558	64.6	E
Alternative 3						
	AM Peak Hour			PM Peak Hour		
Intersection	Queue Length (feet)	Delay[c]	LOS	Queue Length (feet)	Delay[c]	LOS
Grand Ave at SR-60 westbound off-ramp[a]	527	37.5	D	305	51.4	D
Grand Ave at SR-60 eastbound off-ramp[a]	443	20.0	C	172	10.3	B
Grand Ave at Golden Springs Dr[b]	372	49.6	D	469	53.9	D

[a] Queue length in feet on freeway off-ramp approach
[b] Queue length in feet on southbound approach
[c] Delay in seconds per vehicle average
Source: KOA Corporation 2011.

Congestion Relief and System-Wide Improvements

The project would provide congestion relief and improve system-wide operations by improving traffic flow. The project would increase overall speeds during both the opening year and horizon year (see Table 3-10 through Table 3-10) under both build alternatives when compared to no-build. PM emissions typically follow a U-shaped curve relative to speed, with highest emissions observed at the lowest and highest speeds. Exhaust emissions are typically higher at the lowest speeds and tend to decrease as speeds increase to the most efficient/ lowest emission speed of around 45 mph. As speeds increase from 45 mph upward, emissions tend to increase as speeds increase. Thus, 45 mph, the speed at which emissions are at a minimum, is the approximate target speed for reducing PM emissions. Since KOA Corporation provided VMT estimates apportioned into 5-mph speed-bins for each build alternative as well as the no-build condition, the traffic emissions analysis provided below takes into account the effect that congestion relief would have on exhaust PM emissions under the build conditions when compared to no-build.

3.3.4 Traffic Emissions Analysis

The project traffic engineers (KOA Corporation) provided estimates of daily VMT apportioned into 5-mph speed-bins for the baseline/existing (2009) condition, opening year (2017) condition and horizon year (2037) condition. Future year VMT estimates were provided for both build alternatives, as well as the no-build alternative.

The Caltrans' CT-EMFAC model[2] was then used to estimate PM2.5 and PM10 emissions related to mobile exhaust, tire wear, and brake wear for each project alternative under both future evaluation years (i.e., 2017 and 2037). The baseline/existing year 2009 was also evaluated. Emissions estimates are included below in Table 3-14, where they are combined with re-entrain road dust emissions to ascertain total PM emissions. The CT-EMFAC program assumed a SCAB vehicle fleet mix, with an 8 percent truck fleet, operating under annual-average conditions.

3.3.4.1 Re-entrained Road Dust Analysis

The CT-EMFAC model does not estimate re-entrained road dust emissions. Therefore, re-entrained road dust emissions were calculated using the empirical equation found in Section 13.2.1 of the EPA's *AP-42 Compilation of Air Pollutant Emission Factors*, which was updated in January 2011. Emissions were calculated using VMT traffic data supplied by the traffic engineers (Appendix A) and the emission factor as calculated using the empirical road dust equation. Variables to calculate road dust emissions were taken from traffic data (VMT and vehicle weight) and from nearby climate stations (precipitation).

According to the project's traffic impact study, proposed improvements would result in some surface street arterial VMT shifting to the freeway under the build conditions, when compared to no-build. Under Build Alternative 2, this daily VMT shift is estimated to be 17,789 at opening year 2017 and 23,944 at horizon year 2037; and for Build Alternative 3, the estimate is 15,053 at opening year 2017 and 18,153 at horizon year 2037. This shift is noteworthy because of the difference in silt load factors on surface arterials compared to freeways. The AP-42 re-entrained dust calculation formula worksheets accommodate each of these project-specific factors (i.e., VMT, average vehicle weight, annual precipitation rate, and roadway type). Calculation worksheets are provided in Appendix A.

Table 3-14 summarizes the modeled daily emissions resulting from exhaust, brake and tire wear, and re-entrained road dust along the SR-57/60 project limits. Emissions associated with implementation of the proposed project were obtained by comparing future Build Alternative emissions to future No Build emissions for both 2017 and 2037. The differences in emissions between each build alternative and the no-build alternative represent the net project-related emissions for each build alternative.

Comparison of Build Alternatives to Baseline/Existing Condition

As shown in Table 3-14, total PM10 emissions would increase by approximately 3 percent at opening year 2017 under the build alternatives when compared to existing conditions, while PM2.5 emissions would remain relatively unchanged. At horizon year 2037, total PM10 and PM2.5 emissions would increase by approximately 15 percent and 8 percent, respectively, when compared to existing conditions.

---

[2] CT-EMFAC is a California-specific project-level analysis tool for modeling criteria pollutant and carbon dioxide emissions from on-road mobile sources. The model uses the latest version of the California Mobile Source Emission Inventory and Emission Factors model, EMFAC2007. While regulations and emissions controls adopted after 2007 are not reflected in the model emission factors, CT-EMFAC is the latest on-road emissions modeling tool and is used as standard practice in air quality technical analyses.

Comparison of Build Alternatives to No-Build Condition

As shown in Table 3-14, total PM10 and PM2.5 emissions would decrease by approximately 1 percent at opening year 2017 and horizon year 2037 under the build alternatives when compared to no-build.

3.4 Conclusion

Within the project corridor, total emissions of both PM2.5 and PM10 are anticipated to marginally decrease under both build alternatives by approximately 1 percent, at both opening year 2017 and horizon year 2037, when compared to the no-build condition. The mobile exhaust portion of total emissions would decrease as a result of improved travel speeds, and the re-entrained dust portion of total emissions would decrease as a result of VMT shifting from surface arterials to the freeway.

Transportation conformity is required under CAA section 176(c) (42 U.S.C. 7506(c)) and requires that no federal dollars be used to fund a transportation project unless it can be clearly demonstrated that the project would not cause or contribute to new violations of the NAAQS, increase the frequency or severity of any existing violation, or delay timely attainment of the NAAQS. As required by Final EPA rule published on March 10, 2006, this qualitative assessment demonstrates that the SR-57/SR-60 Confluence Project meets the CAA conformity requirements and will not conflict with state and local measures to improve regional air quality.

Table 3-14: SR-57/60 Confluence Project-Related Particulate Emissions (pounds per day)

	PM10			PM2.5		
Scenario	**Exhaust/ Brake/ Tire Wear**	**Road Dust**	**Total**	**Exhaust/ Brake/ Tire Wear**	**Road Dust**	**Total**
Existing (2009)	33.9	167.8	201.7	31.1	41.2	72.3
2017 No build	31.4	177.8	209.2	29.3	43.6	72.9
2017 Alternative 2	31.0	176.8	207.8	28.8	43.4	72.2
2017 Alternative 3	31.1	177.0	208.1	28.8	43.5	72.3
2037 No build	32.4	200.4	232.8	29.7	49.2	78.9
2037 Alternative 2	32.1	198.9	231.0	29.3	48.8	78.1
2037 Alternative 3	31.8	199.3	231.1	29.0	48.9	77.9
Comparison of Emissions between Build Alternatives and Existing Conditions						
2017 Alternative 1 - Existing	(2.9)	9.0	6.1	(2.3)	2.2	(0.1)
2017 Alternative 2 - Existing	(2.8)	9.2	6.4	(2.3)	2.3	-
2037 Alternative 1 - Existing	(1.8)	31.1	29.3	(1.8)	7.6	5.8
2037 Alternative 2 - Existing	(2.1)	31.5	29.4	(2.1)	7.7	5.6
Comparison of Emissions (Percent Change)between Build Alternatives and Existing Conditions						
2017 Alternative 1 - Existing	-8.6%	5.4%	3.0%	-7.4%	5.3%	-0.1%
2017 Alternative 2 - Existing	-8.3%	5.5%	3.2%	-7.4%	5.6%	0.0%
2037 Alternative 1 - Existing	-5.3%	18.5%	14.5%	-5.8%	18.4%	8.0%
2037 Alternative 2 - Existing	-6.2%	18.8%	14.6%	-6.8%	18.7%	7.7%

Comparison of Emissions between Build Alternatives and No-Build Conditions						
2017 Alt 1 – 2017 No Build	(0.4)	(1.0)	(1.4)	(0.5)	(0.2)	(0.7)
2017 Alt 2 -– 2017 No Build	(0.3)	(0.8)	(1.1)	(0.5)	(0.1)	(0.6)
2037 Alt 1 – 2037 No Build	(0.3)	(1.5)	(1.8)	(0.4)	(0.4)	(0.8)
2037 Alt 2 – 2037 No Build	(0.6)	(1.1)	(1.7)	(0.7)	(0.3)	(1.0)
Comparison of Emissions (Percent Change) between Build Alternatives and No-Build Conditions						
2017 Alt 1 – 2017 No Build	-1.3%	-0.6%	-0.7%	-1.7%	-0.5%	-1.0%
2017 Alt 2 -– 2017 No Build	-1.0%	-0.4%	-0.5%	-1.7%	-0.2%	-0.8%
2037 Alt 1 – 2037 No Build	-0.9%	-0.7%	-0.8%	-1.3%	-0.8%	-1.0%
2037 Alt 2 – 2037 No Build	-1.9%	-0.5%	-0.7%	-2.4%	-0.6%	-1.3%

Implementation of the proposed project will not result in new violations of the federal PM2.5 or PM10 air quality standards for the following reasons:

- Based on representative monitoring data, ambient PM2.5 are on a decreasing trend (see Figure 3-4). Ambient PM10 concentrations are following a decreasing trend as well. (see Figure 3-5).
- Based on representative monitoring data, PM10 24-hour concentrations have not exceeded the national standard, 150 $\mu g/m^3$, in the past three years.
- While the Azusa and Glendora-Laurel monitoring stations have experienced exceedances of the federal PM2.5 NAAQS, representative monitoring data indicates that PM2.5 concentration have decreased over the past three years, is nearing the national standards, and concentrations should be below the annual average PM2.5 standard if the trend continues.
- In general, construction of either build alternative would result in improved level of service in the local project region as a whole, as the project increases efficiency of the roadway, resulting in improvements in regional emissions.
- Construction of either build alternative would result in improvement to overall speeds in the project corridor and local project region at both opening year 2017 and horizon year 2037, resulting in improvements in regional emissions.
- Total project-related emissions within the project region would show a net decrease, relative to no build alternative under either build alternative at both opening year 2017 and horizon year 2037.

For these reasons, future or worsened PM2.5 or PM10 violations of any standards are not anticipated. Therefore, the proposed SR-57/SR-60 Confluence Project meets the conformity hot spot requirements in 40 CFR 93.116 and 93.126 for PM10 and PM2.5.

Chapter 4 References

California Air Resources Board. 2009. *The California Almanac of Emissions and Air Quality.*

California Air Resources Board. 2011. *Ambient Air Monitoring Data*. Available: <http://www.arb.ca.gov/adam/topfour/topfour1.php>.

Federal Highway Administration and U.S. Environmental Protection Agency. 2006. *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas*.

KOA Corporation. 2011. *SR-57/SR-60 Confluence Project Traffic Impact Study*. December.

South Coast Air Quality Management District. 2009a. *Pomona Station Wind Monitoring Data.* Available: <http://www.aqmd.gov/smog/metdata/ISCST3_Table1.html>.

South Coast Air Quality Management District. 2009b. *Azusa Station Wind Monitoring Data.* Available: <http://www.aqmd.gov/smog/metdata/ISCST3_Table1.html>.

Southern California Association of Governments. 2008. *2008 Regional Transportation Plan.*

U.S. Environmental Protection Agency. 2011. *AP-42 Compilation of Air Pollutant Emission Factors.* January.

[this page left blank intentionally]